Name: M. Umer farooq | Quiz Subject: Physics

Time Remaining: 45/45 (Minutes)

Q.1 | Test 5 OSCILATIONS | Physics Unit Wise

A particle executing a vibratory motion while passing through the mean position has

A) Maximum P.E. and minimum K.E.
B) P.E. and K.E. both maximum
C) Maximum K.E. and minimum P.E.
D) P.E. and K.E. both minimum

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Correct Answer:

A B C D

Next

Time Remaining: 44/45 (Minutes)

Q.2 | Test 5 OSCILATIONS | Physics Unit Wise

The frequency of wave is 0.002 Hz. Its time period is

A) 100 s
B) 5000 s
C) 500 s
D) 50 s

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Correct Answer:

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Time Remaining: 44/45 (Minutes)

Q.3 | Test 5 OSCILATIONS | Physics Unit Wise

The unit of force constant is

A) Nm
B) N/kg
C) N/m
D) Nkg

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Correct Answer:

A B C D

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Time Remaining: 44/45 (Minutes)

Q.4 | Test 5 OSCILATIONS | Physics Unit Wise

The amplitude, frequency and period of an object vibrating at the end of spring, if the equation for its position, as a function of time, is

$$x = 0.25\sin\left(\frac{\pi}{3}\right)t$$

A) 0.25m, 0.2 Hz, 4s
B) 0.25m, 1/8 Hz, 8s
C) 0.25m, 0.25 Hz, 4s
D) 0.25m, 1/6 Hz, 6s

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Correct Answer:

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Time Remaining: 44/45 (Minutes)

Q.5 | Test 5 OSCILATIONS | Physics Unit Wise

Distance and displacement traveled by a vibrating body in a time equal to $\frac{3}{4}T$; where T is the period of the vibration

A) 3x ,$3x_{oo}$
B) 3x ,x_{oo}
C) 3x ,$_o$ 0
D) 2x ,$_o$ 0

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Correct Answer:

A B C D

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Time Remaining: 44/45 (Minutes)

Q.6 | Test 5 OSCILATIONS | Physics Unit Wise

The product of frequency and time period is

A) 4 B) 1 C) 2 D) 6

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Correct Answer:

A B C D

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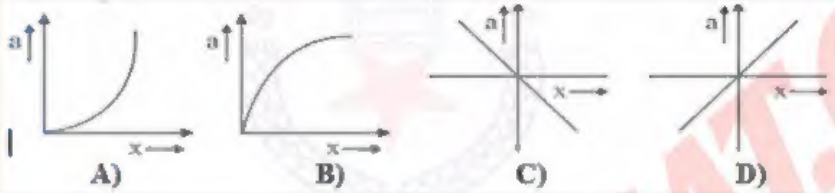
Time Remaining: 44/45 (Minutes)

Q.7 | Test 5 OSCILATIONS | Physics Unit Wise

7The variation of the acceleration a of the particle executing S.H.M. with displacement x is as shown in the figure



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Correct Answer:

A B C D

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Time Remaining: 44/45 (Minutes)

Q.8 | Test 5 OSCILATIONS | Physics Unit Wise

Distance covered during one vibration of an oscillating body in terms of amplitude 'A' is

A) $\frac{A}{2}$
B) 2A
C) A
D) 4A

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Correct Answer:

A B C D

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Time Remaining: 44/45 (Minutes)

Q.9 | Test 5 OSCILATIONS | Physics Unit Wise

A particle moves in a circular path with a uniform speed. Its motion is:

A) Periodic
B) Oscillatory
C) Simple harmonic motion
D) Angular SHM

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Correct Answer:

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Time Remaining: 43/45 (Minutes)

Q.10 | Test 5 OSCILATIONS | Physics Unit Wise

If the frequency of simple pendulum is 0.25 Hz then its time period is

A)1 sec
B) 3 sec
C) 2 sec
D) 4 sec

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Correct Answer:

A B C D

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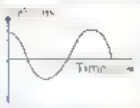
Time Remaining 43/45 (Minutes)

Q.11 Test 5 OSCILATIONS Physics Unit Wise

The graph represents



A) Motion of a simple pendulum starting from mean position
B) Motion of a simple pendulum starting from extreme position
C) Simple pendulum describing a horizontal circle
D) None of the above

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Correct Answer:

A B C D

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Time Remaining 43/45 (Minutes)

Q.12 Test 5 OSCILATIONS Physics Unit Wise

The restoring force becomes maximum, when the particle reaches at:

A) Mean position
B) Extreme position
C) All position
D) None of them

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Correct Answer:

A B C D

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Time Remaining 43/45 (Minutes)

Q.13 Test 5 OSCILATIONS Physics Unit Wise

A body moves with S.H.M. and makes a complete oscillation in two second, its angular frequency is

A) 2 rad s^{-1} B) 1 rad s^{-1}
C) 3.14 rad s^{-1} D) 0.98 rad s^{-1}

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Correct Answer:

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Time Remaining 43/45 (Minutes)

Q.14 Test 5 OSCILATIONS Physics Unit Wise

14 If the position of oscillating object is given by the equation $X = \sqrt{2}\cos\left(\frac{\pi}{8}t\right)$ then its displacement after 2 second is:

A) 3 m
B) 2 m
C) 1 m
D) 0 m

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Correct Answer:

A B C D

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Physics

Time Remaining 43/45 (Minutes)

Q.15 Test 5 OSCILATIONS Physics Unit Wise

The motion of the projection of a particle moving in a circle with constant speed along the diameter of the circle is

A) SHM but not periodic
B) SHM and periodic
C) Periodic but not SHM
D) Neither SHM nor periodic

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Correct Answer:

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Physics

Time Remaining 43/45 (Minutes)

Q.16 Test 5 OSCILATIONS Physics Unit Wise

If a simple harmonic oscillator has amplitude A and time period T. Its average speed for complete cycle is

A) $\frac{4A}{T}$

B) $\frac{4\pi A}{T}$

C) $\frac{2A}{T}$

D) $\frac{2\pi A}{T}$

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Correct Answer:

A B C D

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Physics

Time Remaining: 42/45 (Minutes)

Q.17 Test 5 OSCILATIONS Physics Unit Wise

The displacement of body executing SHM is

A) $X_o \cos wt$ B) $x_o \sin wt$

C) $x_o \sin^2 wt$ D) both A,B

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Correct Answer:

A B C D

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Time Remaining 42/45 (Minutes)

Q.16 Test 5 OSCILATIONS Physics Unit Wise

Phase of simple harmonic oscillator gives
A)Direction of motion
B) Displacement
C) Both a and b
D) None

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Correct Answer:

A B C D

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Time Remaining 42/45 (Minutes)

Q.15 Test 5 OSCILATIONS Physics Unit Wise

If spring constant K=20Nm^{-1} and m=10 kg than the value of displacement is

A) 5 m
B) 6 m
C) 8 m
D) 9m

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Correct Answer:

A B C D

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Physics

Time Remaining: 41 / 45 (Minutes)

Q.20 Test 5 OSCILATIONS Physics Unit Wise

Which of the following quantity for particle executing SHM is non-zero at mean position

A) Force
B) Acceleration
C) Velocity
D) Displacement

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Correct Answer:

A B C D

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Physics

Time Remaining: 41 / 45 (Minutes)

Test 5 OSCILATIONS — Physics Unit Wise

When a particle execute SHM passes through mean position, it has

A) Minimum K.E and max P.E
B) Max K.E and Max momentumqwe
C) Max K.E and max P.E
D) Minimum K.E and min P.E

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Correct Answer:

A B C D

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Physics

Time Remaining 40/45 (Minutes)

Test 5 OSCILATIONS — Physics Unit Wise

The acceleration of body executing SHM is directly proportional to

A) Applied force
B) Amplitude
C) Displacement
D) Frictional force

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Correct Answer:

A B C D

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Physics

Time Remaining 40/45 (Minutes)

Q.23 Test 5 OSCILATIONS Physics Unit Wise

The wave form of SHM is

A)Pulsed wave
B) Square wave
C) Triangular waved
D) Sine wave

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Correct Answer:

A B C D

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Time Remaining 39/45 (Minutes)

24 Test 5 OSCILATIONS Physics Unit Wise

The maximum distance of body from mean position when body is executing SHM is called

A)Time period
B) Displacement
C) Amplitude
D) Frequency

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Correct Answer:

A B C D

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Time Remaining 39/45 (Minutes)

Q.25 Test 5 OSCILATIONS Physics Unit Wise

The S.I unit of frequency is

A)Vibration s^{-2}

B) Ms^{-1}

C) Hertz

D) s^{-1}

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Correct Answer:

A B C D

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Physics

Time Remaining 39/45 (Minutes)

Q.26 Test 5 OSCILATIONS Physics Unit Wise

Which of the following forces is responsible for SHM

A) Applied force
B) Restoring force
C) Fractional force
D) Elastic force

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Correct Answer:

A B C D

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Physics

Time Remaining 39/45 (Minutes)

Test 5 OSCILATIONS — Physics Unit Wise

Which of the following is an example of SHM (in ideal situations)

A)Motion of simple pendulum
B) Motion of horizontal spring man system
C) Motion of violin string
D) All of these

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Correct Answer:

A B C D

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Physics

Time Remaining 38/45 (Minutes)

Q.28 Test 5 OSCILATIONS Physics Unit Wise

Acceleration of body executing SHM is always directed towards

A)Extreme position
B) Mean position
C) Along the direction of motion
D) None

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Correct Answer:

A B C D

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Time Remaining: 38/45 (Minutes)

Q.29 | Test 5 OSCILATIONS | Physics Unit Wise

In vibrational motion(SHM)

A) P.E remains conserved
B) Average K.E remain constant
C) Neither P.E nor K.E remains constant
D) Total energy remains constant

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Correct Answer:

A B C D

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Time Remaining: 38/45 (Minutes)

Q.30 | Test 5 OSCILATIONS | Physics Unit Wise

Find out the value of instantaneous displacement of a body doing SHM starting from mean position having amplitude 100 cm and frequency 50Hz at a time instant of (1/600) second

A) 100 cm
B) 50cm
C) 25 cm
D) undefined

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Correct Answer:

A B C D

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Test NO 05 Physics

unit NO #04 Oscillation.

Answer key

1 C 2 C 3 C 4 D 5 B 6 B 7 C 8 D
9 A 10 D 11 A 12 B 13 C 14 C 15 B 16 A
17 D 18 C 19 A 20 C 21 B 22 C 23 D 24 C
25 C 26 B 27 D 28 B 29 D 30 B

Discussion

MCQ 01 At mean velocity max / acceleration min

MCQ 02 $f = \frac{1}{T} = T = \frac{1}{f} = \frac{1}{0.002} = \frac{1000}{2} = 500 \text{ sec}$

MCQ 03 force constant = (Nm^{-1})

MCQ 04 $\boxed{x = 0.25 \sin\left(\frac{\pi}{3}\right)t} \Rightarrow x = x_0 \sin \omega t$.

$\Rightarrow \boxed{x_0 = 0.25}$

$\boxed{\omega = \frac{\pi}{3}} \Rightarrow 2\pi f = \frac{\pi}{3} \therefore \boxed{f = \frac{1}{6}}$

$T = \frac{1}{f} = \boxed{6 s}$

MCQ 05 ∵ (mean) یعنی Body کو بتایا جائے تو
G سے شروع

MCQ No 06 $\beta = \frac{1}{T} = \beta T = 1$

MCQ 07 graph $\beta = \frac{1}{T}$ lies in II and IV portion because

$\boxed{F \propto -x}$

MCQ 08 ① Distance equal to Amplitude $\boxed{A = 4A}$

MCQ 09 uniform motion Not SHM only periodic

MCQ 11 At mean velocity max so graph start from mean position.

MCQ 12 $\uparrow \boxed{F_0 \propto -x} \uparrow$ $\boxed{\text{At extreme } x = \max}$

MCQ 13 $\omega = ?$ $T = 2s$ $= \omega = 2\pi f$ $\frac{2\pi}{T} = \frac{2\pi}{2} = \pi$

MCQ 14 $x = \sqrt{2} \cos\left(\frac{\pi}{8}\right) t$ $\sqrt{2} \cos \frac{\pi}{8} \times 2$

$= \sqrt{2} \times \cos 45 = \sqrt{2} \times \frac{1}{\sqrt{2}} = \boxed{1m}$

MCQ 19 $\boxed{F = kx}$ $x = \frac{F}{k} = \frac{mg}{k} = \frac{5 \times 10}{20} = \boxed{5m}$

MCQ 30 $\boxed{x = x_0 \sin \omega t}$

$x = 100 \sin 2\pi (50) \frac{1}{600}$

$100 \times \sin \frac{\pi}{6} = 100 \times \sin 30$

$100 \times \frac{1}{2} = \boxed{50cm}$